CLAIMS:

1. An apparatus for carrying out solid phase microextraction of analytes included in a fluid or a solid sample, comprising gas tight enclosure means, means for introducing a sample including target analytes into the enclosure means, and means located within the enclosure means for extracting the target analytes from the sample, wherein the extraction means either samples a head space near the sample or samples the sample directly.

2. An apparatus according to Claim 1, wherein the extraction means includes a solid support, which may be coated or uncoated, the solid support and/or the coating being selected, based upon selectivity of the support and/or coating for at least one of the analytes present in the sample.

3. An apparatus according to Claim 2, wherein the support is a cylindrical support.

4. An apparatus according to Claim 3, wherein the cylindrical support is in the form of a fibre.

5. An apparatus according to Claim 3, additionally comprising means for shielding the cylindrical support from the atmosphere.

6. An apparatus according to Claim 2, additionally comprising means for desorbing the target analytes, located outside of the gas tight enclosure means.

7. An apparatus according to Claim 4, wherein the coating is an organic material selected from the group consisting of Carbowax®, silicone, polyimide, divinylbenzene, polyacrylate, carbon-based sorbents and ion-exchange materials.

8. An apparatus according to Claim 4, wherein the solid support is of a material selected from the group consisting of fused silica, graphite, solid polymers and metals .

9. An apparatus according to Claim 4, wherein the fibre is of fused silica, and the coating is of silicone.

10. A method for solid phase micro extraction of analytes included in a fluid or a solid sample, comprising

(c) exposing a fluid or a solid sample including target analytes, to a solid support which may be coated or uncoated, the support and/or the coating being selected based upon selectivity of the support and/or coating for at least one of the analytes in the sample, for a sufficient time to permit chemical extraction of the analytes by the support to occur, and

(d) ending said contact and then placing said solid support into a micro volume of solvent where chemical desorption of the analytes from the support occurs.

11. A method according to Claim 10, wherein the support is in the form of a fibre.

12. A method according to Claim 11, wherein the method is effected within a gas tight enclosure.

13. A method according to Claim 12, wherein the solvent is a suitable organic solvent.

14. A method according to Claim 10, wherein the chemical extraction is by absorption or adsorption of the target analyte by the solid support or coating.

15. A method according to Claim 10, wherein the sample is in an aqueous solution.

16. A method according to Claim 10 wherein the support is uncoated.

17. A method according to Claim 16, wherein the support is of fused silica.

18. A method according to Claim 10, wherein the support is coated with an organic material selected from the group consisting of Carbowax®, silicone, polyimide, divinylbenzene, polyacrylate, carbon-based sorbents and ion-exchange materials.

19. A method according to Claim 18, wherein the coating is silicone.